

Assessing Pauling's Wide-Ranging Life

Reviewed by John D. Roberts

Linus Pauling was an extraordinary person—a scientist, educator, humanist, and statesman with worldwide impact in each of these roles. In later life, perhaps coming to grips with his own mortality and also recognizing the magnitude of the task of properly assessing his myriad contributions, Pauling was very cooperative with writers in giving interviews, allowing access to his papers, and commenting on the results. Perhaps he also wanted to counter the rather sloppy 1989 biography "Linus Pauling: A Man and His Science," by Anthony Serafini (C&EN, Jan. 29, 1990, page 66).

His death in 1994 seems to have occasioned a wave of new Pauling biographies. Three have appeared that approach their subject with quite different styles. My views on these books are strongly influenced by my own interactions with Linus over almost 50 years, but I should make it clear I was never a member of the Pauling inner circle. Even though we were colleagues in the division of chemistry and chemical engineering at California Institute of Technology, we were more mutually respectful than close.

"Linus Pauling in His Own Words" was edited by Barbara Marinacci, the sister of Pauling's son-in-law. Pauling himself wrote an introduction, and the text was reviewed before publication by several of his close associates. A carefully stitched-together compendium of selected writings, speeches, and interviews, it is divided into four major sections: early life and philosophy of education, structure of matter, the nuclear age, and nutritional medicine.

Marinacci, a professional writer who knew and worked with Pauling over many years, is modestly listed as editor. However, "In His Own Words" is not quite accurate. She has used an editor's prerogative not only to set the context and ensure the continuity of Pauling's words, but to do quite a bit of editorializing as well. In the book's early sections, because Marinacci is not a scientist, she generally lets Pauling

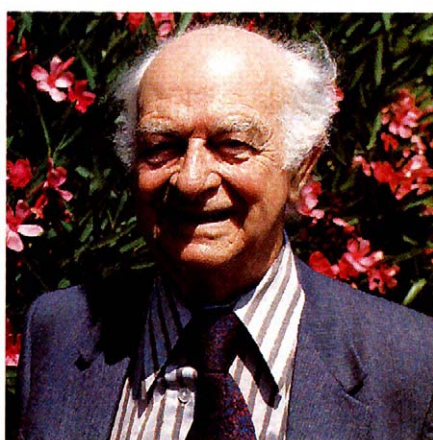


Photo by Rudy Baum

Three biographers view Linus Pauling's myriad accomplishments very differently, none offers a definitive treatise

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"Linus Pauling in His Own Words," edited by Barbara Marinacci, Simon & Schuster, 1230 Avenue of the Americas, New York, N.Y. 10020, 1995, 320 pages, \$27.50 hardback (ISBN 0-684-80749-1), \$14 paperback (ISBN 0-684-81387-4); "Linus Pauling: A Life in Science and Politics," by Ted Goertzel and Ben Goertzel, Basic Books, 10 East 53rd St., New York, N.Y. 10022-5299, 1995, 320 pages, \$27.50 (ISBN 0-465-00672-8); and "Force of Nature: The Life of Linus Pauling," by Thomas Hager, Simon & Schuster, 1230 Avenue of the Americas, New York, N.Y. 10020, 1995, 721 pages, \$32.50 (ISBN 0-684-80909-5)

speak for himself, although the flow of ideas is often interrupted by what seem unnecessary compulsions to make sure that the reader knows what is coming next. In later chapters, particularly in the section on nutritional medicine, Marinacci's words are sufficiently numerous to merit coauthorship. Her purpose seems to be to give Pauling's

words more context. But, overall, they make the section much less interesting.

Pauling's own account of his early life, as developed here in a synthesis from his writings and interviews, is fascinating reading and has many powerful messages about work ethic, curiosity, and self-confidence. It should be required reading both for schoolchildren and for college and university admissions committees (including Caltech's), who would not be likely these days to accept an applicant with Pauling's pre-college history. He says of himself, "My high-school grades were not outstanding, except in the classes that interested me, such as mathematics and science."

I identify with Pauling's early life because I had many of the same experiences, if on a smaller scale. We shared an early interest in Lepidoptera, experimenting with chemicals, a mother in uncertain health, family financial problems, strongest grades in science, encouraging and inspiring teachers, the need to earn at outside jobs in college, acting as teaching assistant or instructor while an undergraduate, and later, marrying a woman about whom I could say, as Pauling did about Ava Helen, "I always considered her quicker and in some ways more intelligent than I."

"In His Own Words" has wonderful passages from Pauling's writings and speeches about his work in chemistry, although there is some needless repetition. It contains nothing about his work on the structure of atomic nuclei, despite his long-standing interest in this field, with publications right up to 1994.

Linus gave me a copy of "No More War" when it was published in 1958. Reading Marinacci's excerpts of his forceful and compelling prose shows it to be no less cogent today than 38 years ago. To be sure, the hazards of radioactive fallout from atomic bomb testing are now minimal, but the legacy of Chernobyl makes clear that Pauling was right in emphasizing the dangers of testing in the atmosphere. His inability to get all testing stopped led directly to the legacy of the "sorcerer's apprentices" of the nuclear age, so that we now have to deal with tons of plutonium, most of it in

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many thousands of nuclear devices coveted by countries with ruthless rulers, eager to intimidate, rather than persuade, their neighbors.

The other two biographies are "Linus Pauling: A Life in Science and Politics," by the father-and-son team of psychologist Ted Goertzel and cognitive scientist Ben Goertzel, and "Force of Nature: The Life of Linus Pauling," by sociologist Thomas Hager. Both books make almost stridently clear that they are not authorized biographies, although both acknowledge the cooperation given by Pauling through access to his papers and personal interviews. Indeed, he supplied comments and suggestions on a significant part of the Goertzel book before he died.

Much of the thrust of "A Life in Science" is, as might be expected, psychological. The book had its origin in 1962 when Ted Goertzel's parents, Mildred and Victor (also psychologists), were studying the childhoods of eminent people and became interested in Pauling's story because of his activities, not only in science and education, but also in the peace movement. Pauling encouraged this endeavor and edited some of the early drafts. The elder Goertzels put the work aside because of controversies Pauling became involved in later in his life, including his outspoken advocacy of the benefits of vitamin C and orthomolecular medicine.

The younger Goertzels began a complete rewrite of the existing draft in 1991. They added an analysis of Pauling's scientific achievements, giving enough background in elementary chemistry and physics to make these sections reasonably palatable to nonscientists. More than two-thirds of the book, however, deals with Pauling's political activities, nuclear test ban work, and orthomolecular medicine.

A substantial appendix covers varied responses by a number of psychologists to a Rorschach ink-blot analysis of Pauling conducted by psychologist Anne Roe. You either believe this sort of thing or you don't. I suspect that Linus could have been spoofing during the test, and, indeed, one of the respondents comments that the test was "not well taken" as the examiner apparently "lost control of the situation." If you have ever seen a sample of Pauling's strong, individualistic handwriting, you might regard it as a better indicator of his personality.

The Hager book is massive, with more

than 700 pages and in smaller type than the others. Its introduction characterizes Pauling as "a genius whose mother was committed to a mental ward, a pacifist who patented an armor-piercing artillery shell, a humanist who practically ignored his children," and, in another passage, as "fiercely competitive and emotionally constricted."

In an era when "family values" are so symbolically important, these judgments hardly start readers off with Pauling on a level playing field. But like negative statements in political campaign advertisements, the statements lack context and are half-truths, if they are truths at all. Hager's later account of Pauling's mother's mental problem, as well as of Pauling's relations with his children, are hardly congruent with the introduction. Oddly, nothing is said later about the armor-piercing shell.

Compared to the relatively easy flow of the Goertzels' book, Hager's is slow going. It uses lots of words to evoke imagery of the various Pauling environments, and it tends to employ provocative words to hype every development. However, Hager deserves credit for digging out an enormous amount of material that, to my knowledge, is heretofore unpublished. The material on Pauling in Germany during his Guggenheim Fellowship in 1926 and 1927 is both interesting and detailed, although I cannot vouch for the accuracy of the physics or the character depictions of the physicists involved.

In contrast to the Goertzels' primer on chemistry, Hager makes little concession to nonscientists. As a result, Pauling's chemistry will not be easily understood by lay readers. Among the subjects that previously have not been aired in such detail are the important role of Warren Weaver and the Rockefeller Foundation in helping to shape the direction of Pauling's research from the early 1930s until well after World War II; the acrimony associated with Pauling's ascension to the chairmanship of Caltech's division of chemistry and chemical engineering; his ill-starred relationship with J. Robert Oppenheimer in the late 1920s; the less public part of his battle with Dorothy Wrinch and Irving Langmuir over the Wrinch cyclol theory of protein structure; the mixed results of his foray into immunology; his bout with Bright's disease; and the evolution of his political wars with the FBI, the House Un-American Activities Committee, the U.S. Pass-

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port Agency, and the Senate Internal Security Committee. In the latter of these subjects, fact and interpretation are prolonged almost to tedium.

The ups and downs of Pauling's efforts in behalf of a nuclear test ban and the award of the well-deserved Nobel Peace Prize in 1962 are also chronicled in great detail. Because I do not have firsthand knowledge of Pauling's bitter controversy with Arthur Robinson over the leadership of the Pauling Institute beginning in 1978, I will only comment that the accounts by the Goertzels and by Hager differ dramatically, with Hager seeming to have more of the inside story.

The Goertzels and, especially, Hager seem to delight in trying to gore Caltech about its treatment of Pauling. Concerning the end of Pauling's chairmanship of the division, the Goertzels say he was "forced out by the President and Trustees." Hager says he was "bounced out by DuBridge," who was Caltech's president at the time. However, the best evidence is that Pauling recognized the understandable displea-

sure of the trustees over his acrimonious disputes with Congress and other federal agencies brought on by his espousal of liberal causes and resigned voluntarily. Indeed, he wrote a very gracious letter of resignation.

Hager says Pauling was then "humiliated" by having to move to a smaller office and receive a salary cut. To that, I can only say that Pauling had already moved to a spanking new office in the Church Laboratory before he resigned, and he retained that office afterward. When I later chose not to continue as chairman of the division, I, too, faced Caltech's standard practice of reducing salaries when faculty give up such positions and, of course, had to vacate the spacious chairman's office and return to my third-floor cubbyhole. Big deal!

Hager is untruthful in claiming that I was "eager to prove myself to the President and Trustees" by asking Pauling to give up some of his research space. The fact is, we were already losing superstar Harden McConnell to Stanford University, and I was eager to find a

way to retain other faculty who had offers elsewhere that were attractive because our space situation was so bad. Hager characterizes what he himself calls a final negotiated space settlement as a "raid on Pauling's lab space."

Once an author distorts or incorrectly describes what you know about directly, you wonder what else may be distorted or incorrect in his account. Hager usually sounds plausible, but I think he loses credibility by going too far in interpretative judgments in areas where he lacks expertise.

Readers who want to decide for themselves about Pauling, rather than being told what to think, will have to wait for a biography in which the author takes a more neutral, less judgmental stance. Perhaps science historian and chemist Robert Paradowski, who has studied Pauling longer than anyone, will provide the definitive treatise on this brilliant, motivated, and fascinating man.

John D. Roberts is Institute Professor of Chemistry, emeritus, and a lecturer at California Institute of Technology. □

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